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Children's Dental Health Survey 2013

Country specific report: **Wales**

Published 19 March 2015



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This report may be of interest to members of the public, health policy officials, Consultants in Dental Public Health and other members of the dental profession, epidemiologists and other academics interested in children's health.

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Version: **Final V1.0**

Date of publication: **19th March 2015**

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Executive Summary

This country specific report focuses on children in Wales who participated in the 2013 Children's Dental Health (CDH) Survey. The report encompasses:

- Clinical oral health, including tooth and gum condition
- Perceptions and experiences of dental health, including self-rated dental and general health
- Oral health related behaviours, including tooth brushing, diet, alcohol and tobacco consumption, and
- Patterns of dental service usage, including access and satisfaction with NHS dental treatment services

The dental examination covered different aspects of tooth and gum (periodontal) condition. A composite measure shows that around a half (47%) of 5 year olds could be said to have good oral health¹. The proportion with good oral health declined with age. A quarter (24%) of 15 year olds had good oral health by the same measure.

Obvious dental decay experience in primary teeth was present in 41% of 5 year olds. In permanent teeth, obvious decay experience was found in 52% of 12 year olds and 63% of 15 year olds. The respective figures for 12 and 15 year olds in 2003 were 54% and 65%. There is no evidence of a change in the proportion of older children with obvious decay experience in permanent teeth in Wales between 2003 and 2013.

A fifth (21%) of 12 year olds had enamel defects, and the proportion of 12 year olds with diffuse opacity reduced from 9% in 2003 to 5% in 2013. Evidence of trauma to permanent incisors was found in 9% of 12 year olds, while 4% of 15 year olds had tooth surface loss into dentine or pulp on the lingual surfaces of their permanent incisors. In relation to periodontal health, 63% of 15 year olds had visible plaque deposits and 42% had gingivitis (bleeding).

The survey questionnaires provided information on perceptions and behaviours relevant to the oral health of children. A majority of children held positive views of their dental health. Seven tenths of the 12 and 15 year olds (69% and 70%) reported that their dental health was good or very good. Girls were more likely than boys to report good or very good dental health.

Despite many children reporting positive overall views of their dental health, dental problems were common. Seven tenths of 12 and 15 year olds (71% and 68%) reported a problem with their dental health in the last three months. The most commonly reported problem was sensitive teeth (32% of 12 year olds and 40% of 15 year olds), followed by mouth ulcers, bad breath, toothache and bleeding gums. Toothache, reported by 18% of 12 year olds and 17% of 15 year olds, was more common among children from relatively deprived families, as represented by their eligibility for free school meals.

Oral conditions can have an impact on children's quality of life in different ways, not just functionally, but also psychologically and socially. Over half (52%) of the 12 year olds and 15

¹ The good oral health indicator combines the absence of obvious decay experience, tooth surface loss into dentine and calculus.

year olds (54%) reported that their daily life had been affected by problems with their teeth and mouth in the last three months. This was most commonly experienced as embarrassment when smiling or laughing, followed by difficulty eating and difficulty cleaning teeth. Parents also reported that the oral health of their children affected their family life, most frequently by the need to take time off work, the parents feeling stressed or anxious or the child requiring more attention.

The survey also provides a range of information on behaviours relevant to oral health, such as frequency of tooth brushing, diet, smoking and alcohol consumption. Tooth brushing twice a day, a good marker of oral hygiene, has increased significantly in 8 year olds since the previous survey. Three quarters of the older children (73% of 12 year olds and 75% of 15 year olds) reported that they brushed their teeth twice a day or more often. A minority of 15 year olds (14%) reported drinking sugary drinks four or more times a day. A quarter or more of 12 and 15 year olds drank water four or more times a day. Smoking amongst 12 year olds was not very common; however a quarter (25%) of 15 year olds reported having tried smoking. Similarly, amongst 12 year olds, a third (34%) of pupils reported having tried drinking alcohol, increasing to over three quarters (79%) of 15 year olds.

The information generated on patients' utilisation and experience of dental care services has implications for the oral health of children and the resources required by the NHS to treat and prevent oral health problems. In Wales, there has been little change in children's reported dental attendance patterns since 2003. Almost nine out of ten 12 and 15 year olds reported attending the dentist for a check-up, and a similar proportion had attended the dentist in the last 12 months.

In relation to access to NHS dental services eight out of ten parents reported they had never experienced difficulty finding an NHS dentist for their child. The proportion of parents reporting that they had experienced a difficulty increased between 2003 and 2013, from 6% to 14%. More than nine in ten (94%) parents said they were satisfied with the last dental treatment practice visited by their child.

1 Introduction and methodology

1.1 Introduction

The 2013 Children's Dental Health (CDH) survey, commissioned by the Health and Social Care Information Centre (www.hscic.gov.uk), is the fifth in a series of national children's dental health surveys that have been carried out every ten years since 1973.

The 2013 survey provides information on the dental health of children in England, Wales and Northern Ireland. The survey measures changes in oral health since the last survey in 2003, and provides information on children's experiences, behaviours and attitudes relevant to their oral health.

Detailed analysis across all three nations is covered in Reports 1-5. This report presents dental health experiences for children living in Wales. The report covers clinical indicators of oral health, as measured in the survey dental examination, and reported perceptions of oral health, behaviours and dental service usage patterns captured from parental and pupil questionnaires (the latter for 12 and 15 year olds only).

Where sample size allows, the data collected in this latest survey will be compared to data from previous CDH surveys to show children's dental health experiences within Wales over time. A major theme arising from the reports is the level of inequality in oral health of children and results are presented comparing children from relatively deprived families, indicated by their eligibility for free school meals in 2013, to other children of the same age. In addition, some comparisons are made by sex.

1.2 Dental terminology

This report makes reference to a number of technical terms associated with teeth and gums. For non-expert readers, a glossary can also be found in Annex A of the technical report. Further information is also available in sections 2.1.3 and 2.1.4 in Report 2. The following sections summarise that information.

1.3 Dental caries

Dental caries (also known as tooth decay) and decay experience of children's teeth are major focuses of the clinical oral health sections. Decay experience is typically assessed in surveys by the dmft (in primary teeth) and DMFT (in permanent teeth) index. The index contains three components related to whether teeth have untreated caries (including where teeth already have fillings) (dt/DT), have already had fillings for caries (ft/FT), or have been removed because of caries (mt/MT).

In primary teeth, an assessment of teeth missing due to decay is complicated by the natural exfoliation of the teeth, making it difficult to determine whether a tooth was lost due to dental decay or whether it exfoliated naturally. Therefore, as in previous surveys, dental examiners were not asked to assess the reason for the absence of primary teeth.

The report presents estimates for the *prevalence*, or extent, of decay amongst children in the population represented by the proportion of children affected by decay at the time of the survey. Results on the mean number of teeth affected by decay at the time of the survey² are

² Using the dmft/DMFT index

also presented. Results for the primary and permanent dentition are provided at both the 'obvious' and 'clinical' dental decay thresholds of severity.

Obvious decay represents established disease which has spread through the outer tooth enamel to significantly involve the inner dentine layer beneath. The survey reports on both "obvious decay experience *excluding* visual dentine caries" where only decay at the frank cavity level is included, and "obvious decay experience" where in addition to frank cavities, decay that can be visualised through the enamel is included. Obvious decay relates to untreated decay, whereas obvious decay *experience* relates to both teeth with untreated decay and teeth that had been previously filled or extracted because of decay.

Clinical decay experience incorporates obvious decay experience, as defined above, but also includes initial stage lesions that are judged to be confined to the tooth enamel. Enamel decay does not usually require a filling, but may indicate the need for interventions to prevent decay progressing into dentine. This is a new development for the 2013 survey and is closer to the criteria now used by clinicians examining and providing care for children. Both visual enamel changes, seen as characteristic white or brown changes in the optical properties of the tooth surface, and cavitation in the tooth enamel are recorded. In the report, "clinical decay experience" includes "obvious decay experience" as well as visual and cavitated enamel lesions whereas "clinical decay experience *excluding* visual enamel caries" only includes "obvious decay experience" and "enamel caries with cavitation".

1.4 Non-carious conditions

Tooth Surface Loss (TSL) is pathological non-carious loss of tooth tissues resulting from chemical action not involving bacteria (erosion), wear due to tooth-to-tooth contact (attrition) or physical wear not caused by tooth-to-tooth contact, for example tooth brushing (abrasion). As in 2003, buccal and lingual surfaces of primary and permanent upper incisors and occlusal surfaces of first permanent molars are reported. Evaluation of the data collected during the training weeks and calibration, showed that dental examiners had low levels of agreement in the case of enamel TSL, but TSL into dentine and dental pulp are easier to identify. This variation should be taken into account when the results of this report are considered.

Developmental defects of enamel occur as the result of alterations to the structure of enamel during its formation. The aetiology, or cause, of these changes is variable as are the changes in appearance of the tooth. Where the opacities are considered unsightly, treatment may be required to improve the appearance of teeth. As in 2003, developmental defects in enamel were only reported on the upper incisors, canines and first premolars of 12 year olds.

Traumatic damage to permanent incisors and treatment undertaken to repair the damage was recorded. All permanent incisor teeth in all age groups were examined.

Indicators of oral health include the condition of children's gingivae (gums) as well as their teeth. The oral examination included four measures of *periodontal health*. Three of these, relating to the visual examination of the gingivae, recorded the presence of gum inflammation, plaque and calculus for each of the six segments of the mouth, for all age groups. The fourth measure of periodontal health was used for 15 year olds only, and required the use of a periodontal probe to detect changes in periodontal health around six

index teeth using the modified Basic Periodontal Index (BPE)³. The presence of gingival bleeding was recorded.

1.5 Perceptions of oral health, behaviours and dental service usage

One of the strengths of the CDH Survey is the range of behavioural and attitudinal information collected about the children taking part in the dental examinations.

A major innovation of the 2013 survey was the introduction of the pupil questionnaire for 12 and 15 year olds, to complement the questionnaire sent out to parents and carers for all age groups.

The pupil questionnaire collected a range of information on perceptions and behaviours relevant to oral health and health more generally. Information on subjective outcomes from experience of oral health and dental care was also collected; including assessments of overall dental health, recent problems with oral health and the impact of oral health on the quality of life of the child.

The parent questionnaire collected for all age groups, information on dental hygiene, parental perceptions of the child's oral health, the impact of the child's oral health on the family and more detailed information on the dental care experienced by each child, including satisfaction with and access to services.

1.6 Survey methodology

A representative sample of children aged 5, 8, 12 and 15 years attending state and independent schools, including academies and free schools in Wales but excluding special schools, were selected to take part in this survey. A parallel survey of children educated in special needs schools has been conducted as part of the NHS epidemiology programme in Wales and the results are expected to be published in 2015⁴.

A total of 13,628 children were sampled in participating schools across England, Wales and Northern Ireland; 9,866 dental examinations were completed. Dental examination participation rates varied across the age cohorts as follows:

- 5 year olds 70%
- 8 year olds 65%
- 12 year olds 83%
- 15 year olds 74%

The requirement for positive written parental consent for the dental examination with 5 and 8 year olds is likely to have reduced participation from those cohorts. Older children (12 and 15 year olds) that were examined were asked to complete a questionnaire at the same appointment as their examination; 99.6% of them completed it.

³ See 'Guidelines for periodontal screening and management of children and adolescents under 18 years of age.' Clerehugh V, Kindelan S. British Society of Periodontology and The British Society of Paediatric Dentistry, 2012

⁴ The results are expected to be published on the NHS Dental Epidemiology for England website at <http://www.nwph.info/dentalhealth/>

Parents and carers (referred to hereafter as parents), of children who were examined were invited to complete a questionnaire; the overall response rate was 43%. Response was higher amongst the parents of 5 and 8 year olds, all of whom had already provided written consent for the dental examination.

Levels of missing data within productive cases were generally low. Item non-response on the dental examination was typically below 1% of eligible cases, with the highest non-response recorded in relation to trauma to permanent teeth (up to 2.1% of cases). For straightforward question formats, item non-response in the pupil and parent questionnaires was generally below 2%. Questions using a yes/no grid format for items on a list had the highest item non-response from both children and parents. As the majority of this non-response represented failure to tick the 'no' codes relevant to the individual, it was assumed that this was the case in the production of the derived variables associated with these questions.

Further information on the survey design and implementation can be found in the quality statement and technical report published alongside this report⁵.

1.7 Consent methodology and trends

For the 2013 survey, the survey consent methodology was changed from negative (opt-out) parental consent for the dental examination to:

- For 5 and 8 year old examinations: positive (opt-in) parental consent was collected (with each child being allowed to opt-out on the examining day)
- For 12 and 15 year old examinations: positive (opt-in) consent was collected from the older children on the examining day (with parents being allowed to opt-out their child in advance)

When comparing the 2013 results with the previous surveys, these substantial changes must be taken into account, as they can lead to systematic changes (bias) in the data collected. For example, parents of younger children with tooth decay could have been less likely to opt their child into the survey. It is impossible to adjust for this non-response bias.

Further evidence relating to the likely impact of such changes is discussed in Report 1. Based on this evidence, trends in oral health in the primary dentition for 5 and 8 year olds are not presented. Although the change in methodology could also have impacted on the data for 12 and 15 year olds, this is regarded as less likely and so trends for permanent teeth in 12 and 15 year olds are presented.

1.8 Note on text and tables

Differences cited in the text are statistically significant ($p < 0.05$) unless otherwise stated. This means that there is approximately a 1 in 20 risk that the difference does not exist in reality in the population when sampling error is taken into account.

A dash in a table indicates a zero value, while an asterisk indicates a proportion of less than 0.5% or a mean of less than 0.05.

The statistics in the tables are produced using weights that adjust for selection probabilities, non-response bias and population totals. The unweighted bases shown in each table indicate

⁵ <http://www.hscic.gov.uk/pubs/ChildDentalHealth>

the number of valid responses on which the estimates are based. Weighted bases are presented for some estimates alongside standard errors and confidence intervals in Annex A of chapters 1 to 4 of the Child Dental Health (CDH) publication. The weighted and unweighted bases may vary slightly across tables due to item non-response.

Figures presented in parentheses [] indicate a low base number of respondents and results are indicative only.

2 Clinical Oral Health

This section summarises headline findings for Wales from the 2013 CDH Survey. These findings relate to the dental examination component of the survey, and cover good oral health, dental decay, periodontal (gum) status, tooth surface loss, enamel defects and traumatic damage to teeth.

2.1 Good oral health

This section focuses on children who were deemed to have good oral health. This group was identified by constructing an indicator of good overall oral health, combining the absence of obvious decay experience, no tooth surface loss into dentine, and the absence of calculus, a periodontal risk factor that would imply a need for treatment.

In 2013, a third (33%) of children in Wales could be said to have good overall oral health (Table W.1). Five year olds were more likely to have good oral health (47%) than other age groups. A quarter (24%) of 15 year olds had good oral health.

Table W.1 Percentage of children with good overall oral health, by age

Wales, 2013	Percentages				
<i>All children</i>	5 years	8 years	12 years	15 years	Total
No obvious decay experience	59	41	44	37	45
No calculus	94	77	73	66	77
No tooth surface loss into dentine	82	99	97	94	93
Good overall oral health	47	29	32	24	33
<i>Unweighted bases</i>	493	490	614	554	2,151

2.1.1 Good periodontal health

Absence of gum disease is an important element in identifying children with healthy mouths. The gum disease related measures that were used in determining good oral health were the presence or absence of risk factors for gum disease, plaque and calculus, and whether the gingivae, the soft gum tissue, appeared healthy or not. The assessment was made for each sextant⁶ in the child's mouth.

⁶ Both the upper arch and lower arch of the mouth can be split into three sextants – so in the case of the upper arch of the mouth, this would be the upper right, upper central and upper left sextants.

In Wales, 32% of children had good overall periodontal health in 2013 (Table W.2). This was more likely in 5 year olds than in other ages.

Plaque in no more than one sextant of the mouth was recorded in just under half (45%) of children overall. More than two thirds (69%) of 5 year olds had no gum inflammation, and in 15 year olds more than half (55%) did not have gum inflammation. The proportion of children without calculus reduced with age. Two thirds (66%) of 15 year olds had no calculus.

Table W.2 Percentage of children with no periodontal conditions, by age

Wales, 2013					Percentages
<i>All children</i>	5 years	8 years	12 years	15 years	Total
Plaque in no more than one sextant	53	32	43	53	45
No gum inflammation	69	46	48	55	55
No calculus	94	77	73	66	77
Good periodontal health (all of these)	48	21	28	31	32
<i>Unweighted bases</i>	<i>489</i>	<i>490</i>	<i>614</i>	<i>554</i>	<i>2,146</i>

2.1.2 Absence of obvious decay experience in primary teeth

Table W.3 shows the proportion of children with no obvious (visible or cavitated dentine) decay experience in primary teeth in Wales. In 2013, three fifths of 5 year olds (59%) had no obvious decay in primary teeth. In 8 year olds, less than half (45%) had no obvious decay experience in their primary teeth.

Table W.3 Percentage of children with no obvious decay experience in primary teeth, by age

Wales, 2013			Percentages
<i>Children aged 5, 8</i>	5 years	8 years	Total
No obvious decay experience	59	45	52
<i>Unweighted bases</i>	<i>493</i>	<i>490</i>	<i>983</i>

2.1.3 Absence of obvious decay experience in permanent teeth

As decayed primary teeth are replaced by healthy permanent teeth, the overall condition of children's mouths improves, at least initially. Table W.4 shows that 81% of 8 year olds had no obvious decay experience in any permanent teeth. In 12 year olds this was 48%, and in 15 year olds it was 37%.

Table W.4 Percentage of children with no obvious decay experience in permanent teeth, by age

Wales, 2013		Percentages		
<i>Children aged 8, 12, 15</i>	8 years	12 years	15 years	Total
No obvious decay experience	81	48	37	54
<i>Unweighted bases</i>	<i>490</i>	<i>614</i>	<i>554</i>	<i>1,658</i>

2.1.4 2003 and 2013 compared

Although for methodological reasons, it is inappropriate to compare 2003 and 2013 data on primary caries, there is confidence in the comparability of data for 12 year old and 15 year olds for obvious decay experience.

There has been no significant change in the proportion of 12 or 15 year old children that had no obvious decay experience in Wales between 2003 and 2013 (Table W.5).

Table W.5 Percentage of children with no obvious decay experience in permanent teeth, by age

Wales, 2003-2013		Percentages			
<i>Children aged 12, 15</i>	12 years		15 years		
	2003	2013	2003	2013	
No obvious decay experience	46	48	35	37	
<i>Unweighted bases</i>	<i>559</i>	<i>614</i>	<i>482</i>	<i>554</i>	

There has also been no significant change in the proportion of 12 and 15 year old children with good overall oral health between 2003 and 2013. Almost a third (32%) of 12 year olds and a quarter (24%) of 15 year olds had good oral health by this measure in 2013 (Table W.6). The challenge for public health is to target the factors that have been shown to have an impact on good overall oral health in order to increase the proportion of children with healthy mouths, whilst maintaining the oral health of those children with good oral health.

Table W.6 Percentage of 12 and 15 year olds with good overall oral health, by age

Wales, 2013		Percentages		
<i>Children aged 12, 15</i>	12 years	15 years	Total	
2003	30	22	26	
2013	32	24	28	
<i>Unweighted bases</i>				
<i>Wales (2003)</i>	559	482	1,041	
<i>Wales (2013)</i>	614	554	1,168	

2.2 Prevalence of clinical decay experience

The criteria for assessing dental caries were developed further for the 2013 survey to allow estimates of clinical decay experience to also be produced. This evolution is in order to reflect changes in the presentation of decay and an increasing focus on the prevention and control of initial stage decay⁷. The survey therefore assessed decay in enamel only, both cavitated and visible. Typically, the approach to such lesions is increasingly not to fill or restore them but to adopt preventive strategies that minimise the risk of these developing into dentine decay lesions which typically are thought to require intervention.

Each table in this section reports both clinical decay (untreated) and clinical decay experience (untreated and treated teeth) both with and without visual enamel decay (but always including cavitated enamel caries). Although the treated teeth element includes filled teeth throughout, the treatment of the data on missing teeth was different for primary and permanent teeth. For permanent teeth, loss of a tooth through decay could be determined. Among younger children, attribution of missing teeth to decay cannot be made and so missing teeth are excluded from clinical decay experience for primary teeth. This is explained further in Section 1.3 in the introduction to this report.

⁷ The international evolution and evidence for this approach has been collated by the ICDAS Foundation. See Pitts NB, Ismail AI, Martignon S, Ekstrand K, Douglas GVA, Longbottom C & ICCMS contributing authors. ICCMS™ Guide for Practitioners and Educators. 2014, ICDAS Foundation, <http://www.kcl.ac.uk/dentistry/innovation/innovation-and-translation-centre/ICCMS-Document.pdf>

2.2.1 Clinical decay in primary teeth

Table W.7 shows the percentages of 5 and 8 year old children that had clinical decay experience in their primary teeth. The prevalence of clinical decay and clinical decay experience in primary teeth for 8 year olds was 60% and 65%. For 5 year olds, this was 58% and 59% respectively.

Table W.7 Percentage of children with clinical decay experience in primary teeth, by age

Wales, 2013		Percentages			
Children aged 5, 8	5 years		8 years		
	Visual enamel caries <i>included</i>	Visual enamel caries <i>excluded</i>	Visual enamel caries <i>included</i>	Visual enamel caries <i>excluded</i>	
Clinical decay	58	41	60	51	
Clinical decay experience	59	43	65	57	
<i>Unweighted bases</i>	493	493	490	490	

An alternative way of expressing the extent of clinical decay is to measure it in terms of the number of affected teeth. At the age of 5, children had on average 2.1 teeth affected by clinical decay. At age 8, children had on average 2.2 teeth affected by clinical decay (Table W.8). Using the definition of clinical decay experience including visual enamel caries, the average number of teeth affected at the age of 5 was 2.4. At age 8, the average number of teeth affected was 2.7.

Table W.8 Mean number of primary teeth with clinical decay experience, by age

Wales, 2013		Means			
Children aged 5, 8	5 years		8 years		
	Visual enamel caries <i>included</i>	Visual enamel caries <i>excluded</i>	Visual enamel caries <i>included</i>	Visual enamel caries <i>excluded</i>	
Clinical decay	2.1	1.4	2.2	1.7	
Clinical decay experience	2.4	1.7	2.7	2.2	
<i>Unweighted bases</i>	493	493	490	490	

2.2.2 Clinical decay in permanent teeth

With respect to permanent teeth, 24% of 8 year olds and 56% of 12 year olds had clinical decay experience *excluding* visual enamel caries. For 15 year olds this was two thirds (66%) (Table W.9). The inclusion of visual enamel caries as decay increased the prevalence of clinical decay experience to 47% for 8 year olds, 75% for 12 year olds, and 81% for 15 year olds.

Table W.9 Percentage of children with clinical decay experience in permanent teeth, by age

Wales, 2013							Percentages	
Children aged 8, 12, 15	8 years		12 years		15 years			
	Visual enamel caries included	Visual enamel caries excluded	Visual enamel caries included	Visual enamel caries excluded	Visual enamel caries included	Visual enamel caries excluded		
Clinical decay	43	19	68	40	64	37		
Clinical decay experience	47	24	75	56	81	66		
<i>Unweighted bases</i>	490	490	614	614	554	554		

Table W.10 presents the mean number of permanent teeth with clinical decay experience at each threshold of decay. At age 8, on average, 0.3 teeth had clinical decay *excluding* visual enamel caries rising to 1.1 teeth in 15 year olds. Clinical decay experience *excluding* visual enamel caries was higher with an average of 0.4, 1.5 and 2.4 teeth affected at ages 8, 12 and 15 respectively. These figures illustrate the irreversible and cumulative nature of dental decay with increasing age.

Table W.10 Mean number of permanent teeth with clinical decay experience, by age

Wales, 2013							Means	
Children aged 8, 12, 15	8 years		12 years		15 years			
	Visual enamel caries included	Visual enamel caries excluded	Visual enamel caries included	Visual enamel caries excluded	Visual enamel caries included	Visual enamel caries excluded		
Clinical decay	1.0	0.3	2.3	0.9	2.3	1.1		
Clinical decay experience	1.1	0.4	3.0	1.5	3.7	2.4		
<i>Unweighted bases</i>	490	490	614	614	554	554		

2.3 Prevalence of obvious decay experience

Obvious decay and obvious decay experience are the traditional measures used in decay epidemiology and it is reported here to ensure compatibility. It also relates to treatment need in that, typically, obvious decay is thought to require active intervention, such as a filling. Obvious decay relates to decay into the dentine layer of a tooth and is reported here at two levels, with visual caries (i.e. before a tooth has cavitated) or without visual caries (once a tooth has cavitated).

As well as obvious (untreated) decay and obvious decay experience (untreated decay, filled teeth and missing teeth extracted due to decay), the individual components of filled teeth and teeth missing due to decay (extracted) are reported in this section. The coding of missing teeth was different for primary and permanent teeth, as explained in Section 2.2, and so missing teeth are excluded from clinical decay experience for primary teeth.

2.3.1 Obvious decay in primary teeth

In 2013, two fifths (41%) of 5 year olds were classified as having obvious decay experience (*including* visual dentine caries) in their primary teeth. Over half (55%) of 8 year olds were classified as having obvious decay experience (*including* visual dentine caries) in their primary teeth (Table W.11). In terms of the components of obvious decay experience, 39% of 5 year olds had decay into dentine and 12% had fillings in primary teeth. For 8 year olds, 48% had decay into dentine and 22% had fillings in primary teeth.

Table W.11 Percentage of children with obvious decay experience in primary teeth, by age

Wales, 2013		Percentages			
Children aged 5, 8	5 years		8 years		
	Visual dentine caries <i>included</i>	Visual dentine caries <i>excluded</i>	Visual dentine caries <i>included</i>	Visual dentine caries <i>excluded</i>	
Decay into dentine	39	32	48	36	
Filled (otherwise sound)	12		22		
Obvious decay experience	41	35	55	48	
<i>Unweighted bases</i>	<i>493</i>	<i>493</i>	<i>490</i>	<i>490</i>	

Table W.12 shows that the mean number of primary teeth with decay into dentine was 1.3 in 5 year olds. In 8 year olds this was 1.6 primary teeth.

Table W.12 Mean number of primary teeth with obvious decay experience, by age

Wales, 2013		Means			
Children aged 5, 8	5 years		8 years		
	Visual dentine caries <i>included</i>	Visual dentine caries <i>excluded</i>	Visual dentine caries <i>included</i>	Visual dentine caries <i>excluded</i>	
Decay into dentine	1.3	0.9	1.6	1.0	
Filled (otherwise sound)	0.2		0.5		
Obvious decay experience	1.5	1.2	2.0	1.5	
<i>Unweighted bases</i>	<i>493</i>	<i>493</i>	<i>490</i>	<i>490</i>	

2.3.2 Obvious decay in permanent teeth

As the age of children increases, the percentage affected by obvious decay experience in permanent teeth (as well as the components of obvious decay experience) would be expected to increase. At age 8, 19% had obvious decay experience in permanent teeth with 15% having untreated decay into dentine, 4% having filled teeth and 3% having teeth missing due to decay.

By the age of 12, around half (52%) of children in Wales had obvious decay experience in their permanent teeth (Table W.13). Around a third (35%) of 12 year olds had decay into

dentine requiring treatment, over a quarter (28%) had fillings and less than a tenth (7%) of children had permanent teeth missing due to decay.

By the age of 15, the prevalence of obvious decay experience in permanent teeth increased further to 63% of children. More than half (52%) of 15 year olds had fillings. The proportion of 15 year olds with decay into dentine and teeth missing due to decay was 28% and 11% respectively.

Table W.13 Percentage of children with obvious decay experience in permanent teeth, by age

Wales, 2013 Children aged 8, 12, 15	8 years		12 years		15 years		Percentages
	Visual dentine caries included	Visual dentine caries excluded	Visual dentine caries included	Visual dentine caries excluded	Visual dentine caries included	Visual dentine caries excluded	
Decay into dentine	15	10	35	20	28	20	
Missing due to decay	3		7		11		
Filled (otherwise sound) teeth	4		28		52		
Obvious decay experience	19	16	52	44	63	60	
<i>Unweighted bases</i>	<i>490</i>	<i>490</i>	<i>614</i>	<i>614</i>	<i>554</i>	<i>554</i>	

Initial stage enamel decay in otherwise sound permanent teeth⁸ was identified in more than a third (36%) of 8 year olds, (Table W.14). The proportion of 12 and 15 year olds with initial stage enamel decay on otherwise sound permanent teeth was higher, at 55% and 54% respectively.

Table W.14 Percentage of children with any initial stage tooth decay in otherwise sound permanent teeth, by age

Wales, 2013 Children aged 8, 12, 15	Percentages		
	8 years	12 years	15 years
Initial stage decay on otherwise sound teeth	36	55	54
<i>Unweighted bases</i>	<i>490</i>	<i>614</i>	<i>554</i>

2.4 Severe or extensive dental decay

This section focused on children who had particularly severe or extensive oral health conditions, where the lifetime burdens to the individual or health care system are likely to be substantial.

A subgroup of children have been identified who are more likely to have significant problems related to dental caries in the short or long term, based on the distribution of several caries-related states that reflect untreated disease or likely treatment need. These include multiple teeth affected by caries, teeth which have been or are likely to be lost, and pain or sepsis related to dental caries.

For 5 year olds, four specific conditions have been identified:

⁸ i.e. those teeth with no obvious decay experience

- the presence of five or more teeth with experience of decay into dentine (dmft of 5+, also categorised as high dmft, an indicator of extensive decay)⁹
- the presence of three or more teeth with obvious dental decay lesions (untreated decay either in a tooth with no filling or a pre-existing filling, an indicator of extensive decay)
- the presence of any very severely decayed teeth that are deemed ‘unrestorable’ (severe decay)
- the presence of any evidence of sepsis as part of the PUFA examination¹⁰ (severe decay)

For 15 year olds the same conditions apply, but at age 15 these refer to permanent teeth (indicated by ‘DMFT’ rather than ‘dmft’). Also, an additional severe decay condition applies at 15 years, the ‘loss of any permanent tooth due to decay’. Among younger children, missing primary teeth were coded as unerupted permanent teeth, regardless of why they were missing, so this measure is not reported among 5 year olds.

2.4.1 Severe or extensive decay in primary teeth

Table W.15 shows the distribution of the various severe or extensive decay conditions for 5 year olds across Wales.

Overall, 22% of 5 year olds were affected by severe or extensive dental decay. Having three or more primary teeth with untreated decay into dentine was the most common of the specific conditions, with 19% of 5 year olds affected.

Table W.15 Percentage of 5 year olds with severe or extensive dental decay

5 year olds.

Wales, 2013	Percentages
<i>Children aged 5</i>	5 years
5+ teeth with obvious decay experience (high dmft)	11
3+ teeth with decay into dentine	19
Any unrestorable teeth	7
Any PUFA signs	6
Any of these	22
<i>Unweighted bases</i>	493

⁹ The total number of Decayed, Missing (due to decay) or Filled Teeth is widely used as an index of a child’s decay experience. This is abbreviated to the acronyms “dmft” for primary teeth and “DMFT” for permanent teeth

¹⁰ PUFA is an acronym for referring to four signs of sepsis: open Pulp, obvious Ulceration (related to sepsis), Fistula, and Abscess. The PUFA examination looked for signs of serious infection (sepsis) that usually occur where a tooth has been affected by very advanced decay or extensive treatment.

2.4.2 Severe or extensive decay in permanent teeth

Table W.16 shows the distribution of the various severe or extensive decay conditions defined in the introduction for 15 year olds across Wales.

Overall, 22% of 15 year olds were affected by severe or extensive dental decay. One in ten 15 year olds (11%) had lost a permanent tooth due to decay.

Table W.16 Percentage of 15 year olds with severe or extensive dental decay

Wales, 2013	Percentages
<i>Children aged 15</i>	15 years
5+ teeth with obvious decay experience (high DMFT)	14
3+ teeth with decay into dentine	11
Any unrestorable teeth	2
Any PUFA signs	2
Loss of any permanent teeth due to decay	11
Any of these	22
<i>Unweighted bases</i>	<i>554</i>

2.4.3 The distribution of severe or extensive dental decay

The burden of decay is not evenly distributed. Whilst severe or extensive decay is clearly not restricted to the most deprived in society, the risks appear to be much higher where there is deprivation¹¹. The prevalence of severe or extensive dental decay in the most deprived areas was 30% at age 5 and 32% at age 15. Although results are indicative only due to the low base numbers, the prevalence of any severe or extensive dental was lower in the more affluent areas at both ages (Table W.17)¹².

Table W.17 Percentage of 5 and 15 year olds with any severe or extensive dental decay, by 2010 Welsh Index of Multiple Deprivation

Wales, 2013	Percentages				
<i>Children aged 5, 15</i>	1 (highest deprivation)	2	3	4	5 (lowest deprivation)
5 year olds	30	29	14	23	[9]
15 year olds	32	20	25	15	[19]
<i>Unweighted bases</i>					
5 year olds	146	101	82	93	41
15 year olds	169	138	80	83	39

[] indicate a low base number and results are indicative only

¹¹ <http://gov.wales/statistics-and-research/welsh-index-multiple-deprivation/?lang=en>

¹² The difference across all quintiles for 15 year olds in Wales is not statistically significant.

2.5 Periodontal conditions

Indicators of oral health include the condition of children's gums as well as their teeth. This section examines the periodontal health of children. The examination included five measures of periodontal health. Each of the six segments of the mouth were examined visually for the presence of gum (gingival) inflammation, plaque and calculus. Then, in 15 year olds only, periodontal pocketing and the presence of bleeding were assessed.

Trend analysis is presented in this section although users should be aware of the substantial variation in this data. Further details about the quality indicators can be found in Annex A of Report 2 of the CDH publication¹³.

2.5.1 Plaque

Table W.18 shows that plaque was most commonly observed in 8 year olds, with eight out of ten children at that age having visible plaque. Around seven tenths (69%) of 12 year olds and more than three fifths (63%) of 15 year olds had visible plaque.

Table W.18 Percentage of children with plaque, by age

Wales, 2013		Percentages			
<i>All children</i>	5 years	8 years	12 years	15 years	
Presence of plaque	57	80	69	63	
<i>Unweighted bases</i>	490	489	614	554	

2.5.2 Calculus

Presence of calculus among 5 year olds was relatively rare, with around one in twenty (6%) children in that age group having the condition (Table W.19). The proportion of children with calculus increased with age, and around a third (34%) of 15 year olds had calculus.

Table W.19 Percentage of children with calculus, by age

Wales, 2013		Percentages			
<i>All children</i>	5 years	8 years	12 years	15 years	
Presence of calculus	6	23	27	34	
<i>Unweighted bases</i>	487	487	611	553	

¹³ <http://www.hscic.gov.uk/pubs/ChildDentalHealth>

2.5.3 Gingivitis

In 15 year olds, an assessment of gingival bleeding was made by applying a periodontal probe around six index teeth. Gingival bleeding is a marker of active periodontal disease (gingivitis).

Table W.20 shows that 42% of 15 year olds in Wales had gingivitis in 2013; this is 5 percentage points above the 2003 figure of 37%.

Table W.20 Percentage of 15 year olds with gingivitis

Wales, 2003-2013	Percentages	
	2003	2013
<i>Children aged 15</i>		
Gingivitis	37	42
<i>Unweighted bases</i>	482	554

2.6 Other dental conditions

This section of the report covers non-carious conditions, starting with tooth surface loss, a pathological non-carious loss of tooth tissues. This section then moves on to report developmental defects in tooth enamel, also known as enamel opacities and finally looks at traumatic damage to teeth.

Although decay has traditionally been the focus of dental health services, the three conditions reported here all carry a significant burden both for affected individuals and for health services.

2.6.1 Tooth surface loss

Tooth surface loss (TSL) is a multifactorial condition, that is, it is caused by a number of factors including erosion, attrition and abrasion. In primary teeth, particularly incisors, increasing levels of TSL are expected before the teeth are exfoliated (shed). Significant TSL can however provide an indication of a problem which may continue to affect the permanent dentition and may give symptoms, or if the pulp of the tooth is exposed, cause sepsis (although this is rare). In children who have permanent teeth, TSL, particularly into dentine, is a concern because of potential sensitivity and appearance. It is unknown how much early TSL into enamel will translate into more serious wear. As with decay experience, tooth surface loss affects both primary and permanent teeth, and is similarly cumulative with age, being irreversible.

In primary teeth, the dental examination examined upper primary incisors for TSL. Overall, 51% of 5 year olds had no TSL into enamel with 82% having no TSL into dentine. Children aged 8 were less likely to have any TSL, but this was largely because 8 year olds were much less likely to have primary incisors, which normally exfoliate (shed) between ages 6 and 7 years (Table W.21).

Table W.21 Percentage of children with no tooth surface loss in primary teeth, by age

Wales, 2013		Percentages		
<i>Children aged 5, 8</i>		5 years	8 years	Total
No tooth surface loss into enamel or dentine		51	98	74
No tooth surface loss into dentine		82	99	90
<i>Unweighted bases</i>		<i>493</i>	<i>490</i>	<i>983</i>

Buccal and lingual surfaces were examined separately, and around a tenth (11%) of 5 year olds had evidence of TSL on one or more of the buccal surfaces of the primary upper incisors. Only 3% overall had buccal TSL involving dentine or pulp. TSL progressing to dentine or pulp was present on 17% of lingual surfaces (Table W.22).

Table W.22 Percentage of 5 year old children with tooth surface loss on the surfaces of the primary incisors

Wales, 2013		Percentages	
<i>Children aged 5</i>	Any tooth surface loss	Tooth surface loss into dentine or pulp	
<i>Buccal surfaces</i>	11	3	
<i>Lingual surfaces</i>	47	17	
<i>Unweighted bases</i>	<i>493</i>	<i>493</i>	

In permanent teeth, as well as upper incisors, upper and lower first permanent molars were also examined on their occlusal surfaces. Two thirds of children had no TSL into enamel (67%) and most children (97%) had no tooth surface loss into dentine (Table W.23).

Table W.23 Percentage of children with no tooth surface loss in permanent teeth, by age

Wales, 2013 <i>Children aged 8, 12, 15</i>	Percentages			
	8 years	12 years	15 years	Total
No tooth surface loss into enamel or dentine	84	66	54	67
No tooth surface loss into dentine	100	98	94	97
<i>Unweighted bases</i>	<i>490</i>	<i>614</i>	<i>554</i>	<i>1,658</i>

The proportion of tooth surface loss affecting dentine and pulp was low among older children, with 4% of 15 year olds having tooth surface loss on lingual surfaces of the incisors and 2% having tooth surface loss in dentine or pulp on the occlusal surfaces of molars (Table W.24).

Compared to 2003, there have not been significant changes in the proportion of children with TSL into dentine and pulp on permanent teeth in either 12 or 15 year olds. (Table W.22)

Table W.24 Percentage of children aged 12 and 15 with tooth surface loss into dentine or pulp on the surfaces of permanent incisors and first permanent molars

Wales, 2003-2013 Children aged 12, 15	Percentages	
	2003	2013
Incisors		
<i>Buccal surfaces</i>		
12 year olds	-	*
15 year olds	-	3
<i>Lingual surfaces</i>		
12 year olds	*	2
15 year olds	2	4
Molars		
12 year olds	*	1
15 year olds	3	2
<i>Unweighted bases</i>		
12 year olds	559	614
15 year olds	482	554

2.6.2 Prevalence of enamel defects

This section reports on developmental defects in tooth enamel, also known as enamel opacities. These defects¹⁴ occur as the result of alterations to the structure of enamel during formation. In the dental examination, the upper 8 anterior teeth (incisors, canines and first premolar) were examined in 12 year olds only, for defects under natural lighting conditions.

More than one fifth (21%) of 12 year olds had one or more enamel defect in 2013 (Table W.25). The apparent reduction from 2003 was not statistically significant. The proportion of 12 year olds with diffuse opacity did reduce, from 9% in 2003 to 5% in 2013. As in 2003, the most common defects were demarcated or diffuse opacity: 16% and 5% of 12 year olds respectively had these on one or more teeth in 2013. All other defects were rare, with only 1% presenting with hypoplasia.

Table W.25 Percentage of 12 year olds with enamel opacities and other defects of tooth enamel

Wales, 2003-2013 Children aged 12	Percentages	
	2003	2013
Demarcated opacity	19	16
Diffuse opacity	9	5
Demarcated and diffuse opacity	2	*
Hypoplasia	1	1
Demarcated opacity and hypoplasia	*	*
Diffuse opacity and hypoplasia	*	-
Demarcated and diffuse opacities and hypoplasia	*	-
Other defects	-	-
Any of the above defects	29	21
<i>Unweighted bases</i>	<i>559</i>	<i>614</i>

¹⁴ Section 1.4 in the introduction contains more information on enamel defects.

2.6.3 Traumatic damage

Traumatic damage to teeth can have a significant impact on a child both through the appearance of them and the associated symptoms. Treatment of traumatised teeth can also be extensive, carrying a burden for the individual and their carers as well as health services. In the dental examination, the four upper permanent incisors were examined for untreated or treated trauma. In 5 year olds, and some 8 year olds, permanent incisors had not erupted, and so data for these age groups are not reported.

The percentage of 12 and 15 year olds with any traumatic damage was 9% and 12% respectively in 2013 (Table W.26). These figures were comparable to 2003 levels.

Table W.26 Percentage of children with any traumatic damage to permanent incisors by age and sex

Wales, 2003-2013		Percentages			
Children aged 12, 15	12 years		15 years		
	2003	2013	2003	2013	
Male	11	10	14	13	
Female	7	7	12	11	
Total	9	9	13	12	
<i>Unweighted bases</i>					
Male	287	321	269	299	
Female	272	293	213	255	
Total	559	614	482	554	

3 Perceptions and experience of dental health

Perceptions of dental health and appearance of teeth amongst children are important considerations because they are important aspects of health and wellbeing, and are associated with demand for treatment and with unmet dental treatment need. In addition, they highlight an aspect of dental health that is different but complimentary to that described by the clinical oral health indicators.

As part of the pupil questionnaire, 12 and 15 year olds were asked to rate how good their general and dental health was. They were also asked about their satisfaction with the appearance of their teeth and whether they thought they needed to have them straightened, i.e. perceived need for orthodontic treatment. Parents of all age groups were asked similar, although not identical, questions about their child's teeth.

3.1 Self-rated dental and general health

Table W.27 shows that, overall, both 12 and 15 year old children were more likely to rate their general health as very good or good compared to their dental health. This is not surprising, as most children are in good overall health, but many will have experienced issues with their dental health (for example one or more fillings or tooth extractions). Despite the positive perceptions, there were still just under a third of 12 and 15 year olds who reported their oral health as fair, poor or very poor.

Table W.27: The percentage of children who rated their dental or general health as good or very good, by age

Wales, 2013 <i>Children aged 12, 15</i>	Percentages	
	12 years	15 years
Dental Health	69	70
General Health	88	87
<i>Unweighted bases</i>	<i>609</i>	<i>546</i>

Unweighted bases may vary slightly by item due to non-response

Within both these age groups, girls were more likely than boys to report good or very good dental health (Table W.28).

Table W.28: The percentage of children that rated their dental health as good or very good, by sex

Wales, 2013 <i>Children aged 12, 15</i>	Percentages	
	12 years	15 years
Male	64	67
Female	74	73
<i>Unweighted bases</i>		
<i>Male</i>	<i>317</i>	<i>294</i>
<i>Female</i>	<i>292</i>	<i>252</i>

Unweighted bases may vary slightly by item due to non-response

3.2 Satisfaction with the appearance of teeth in 12 and 15 year olds

In the pupil questionnaire for 12 and 15 year olds, children were asked to rate how satisfied they were with the appearance of their teeth on a five point scale between 'very satisfied' and 'very dissatisfied'. The question did not provide examples of the concept of "appearance", so children may have prioritised aspects of appearance (e.g. the 'whiteness' of their tooth enamel, how straight they consider their teeth to be) differently when making the

assessment. The two 'satisfied' answer categories and two 'dissatisfied' answer categories are grouped in the tables below.

Overall, 57% of 12 year olds and 54% of 15 year olds were satisfied. About one in seven children in each age group were dissatisfied with how their teeth looked (Table W.29).

Table W.29 The percentage of children satisfied or dissatisfied with the appearance of their teeth¹

Wales, 2013 <i>Children aged 12, 15</i>	Percentages	
	12 years	15 years
Satisfied	57	54
Dissatisfied	14	15
<i>Unweighted bases</i>	<i>604</i>	<i>541</i>

¹Remaining responses were included in a 'neither satisfied nor dissatisfied' category that is not reported here.

3.3 Perceived need for teeth straightened

Parents were asked whether their child was currently receiving orthodontic treatment and to rate their child's orthodontic treatment need in terms of whether they would like their child's teeth to be straightened.

As would be expected, these issues are not so relevant for the parents of the youngest children (Table W.30). At age 12, around a quarter of children were in treatment, and the parents of another fifth preferred their children's teeth to be straightened. At age 15, the percentage of parents preferring their children's teeth to be straightened was similar, at 19%.

Table W.30 Parent reported need for the child's teeth to be straightened, by age

Wales, 2013 <i>All parents</i>	Percentages			
	5 years	8 years	12 years	15 years
Prefer them straightened	6	21	20	19
In orthodontic treatment	1	2	23	26
<i>Unweighted bases</i>	<i>237</i>	<i>240</i>	<i>237</i>	<i>170</i>

In addition, the 12 and 15 year old children were asked whether they felt their teeth were 'all right' as they are, or whether they would prefer to have them straightened. Answer categories for already being in orthodontic treatment and being unable to make an assessment were also provided.

Table W.31 reports the proportions of children wanting their teeth straightened and those already in orthodontic treatment. Overall, more than a third of 12 year olds wanted their teeth straightened, while another one in ten were receiving orthodontic treatment.

There is a strong relationship between eligibility for free school meals and perceived need for teeth to be straightened at the age of 15, with children from more deprived families being considerably more likely to want their teeth straightened than other 15 year olds. This relationship did not exist among 12 year olds.

Table W.31 Self-rated need for teeth to be straightened, by sex and eligibility for free school meals

Wales, 2013		Percentages	
<i>Children aged 12,15</i>		12 years	15 years
<i>Total</i>	Prefer teeth straightened	36	33
	Already in treatment	10	14
<i>Male</i>	Prefer teeth straightened	34	27
	Already in treatment	7	13
<i>Female</i>	Prefer teeth straightened	38	38
	Already in treatment	13	15
<i>Eligible for free school meals</i>	Prefer teeth straightened	34	44
	Already in treatment	8	17
<i>Not eligible</i>	Prefer teeth straightened	36	29
	Already in treatment	10	14
<i>Unweighted bases</i>			
<i>Total</i>		607	541
<i>Male</i>		317	292
<i>Female</i>		290	249
<i>Eligible for free school meals</i>		158	113
<i>Not eligible</i>		397	367

3.4 Experience of problems with dental health

3.4.1 Parent reports for younger children

Parents were asked whether their child had experienced any dental health problems in the past 6 months. Overall, 39% of 5 year olds and 50% of 8 year olds were reported to have had a problem over this period (Table W.32).

In the last 6 months, the main problems 5 year olds were reported to have experienced were toothache, another pain in their mouth or bad breath. This was also the case for 8 year olds.

Table W.32 Parent reported problems with their child's dental health in the last 6 months, by age

Wales, 2013	Percentages
<i>Children aged 5, 8</i>	
5 year olds	
Any condition	39
Bad breath	17
Toothache	14
Other pain in mouth	15
Problems with appearance	7
Broken tooth	5
Other problems with teeth or mouth	4
Bleeding or swollen gums	3
Problems caused by dental treatment	-
8 year olds	
Any condition	50
Other pain in mouth	21
Toothache	18
Bad breath	16
Bleeding or swollen gums	8
Problems with appearance	6
Broken tooth	5
Other problems with teeth or mouth	1
Problems caused by dental treatment	-
<i>Unweighted bases</i>	
5 year olds	242
8 year olds	245
<i>Item bases may vary due to non-response</i>	

3.4.2 Self-reports from older children

For older children, details of their dental health problems were collected directly from the children themselves. The reference period for measuring whether or not a problem had been experienced was three months, which is different from the six month reference period used with parents. It is therefore not appropriate to compare the results from the two younger age cohorts with the older children.

For both 12 and 15 year olds, around seven tenths reported experiencing at least one problem with their dental health in the past 3 months (Table W.33).

The most commonly experienced condition at both ages was a sensitive tooth, with around a third of 12 year old and four in ten 15 year old children having experienced this. Mouth ulcers or bad breath were experienced by around a fifth of children at both ages. The more serious problems of toothache and bleeding or swollen gums were reported somewhat less commonly but still by 17% of 15 year olds. Experience of broken teeth was less common.

Table W.33: Self-reported problems with dental health in the last 3 months, by age

Wales, 2013	Percentages
<i>Children aged 12,15</i>	
12 year olds	
Any condition	71
Sensitive tooth	32
Mouth ulcers	23
Bad breath	22
Toothache	18
Bleeding or swollen gums	12
Broken tooth	8
15 year olds	
Any condition	68
Sensitive tooth	40
Mouth ulcers	23
Bad breath	18
Toothache	17
Bleeding or swollen gums	17
Broken tooth	9
<i>Unweighted bases</i>	
12 year olds	611
15 year olds	546

The base reported is for the 'any condition' item. Other item bases may vary due to non-response. Items are placed in descending order of prevalence for 12 year olds then in the same order for 15 year olds

The likelihood of children having experienced at least one condition over the last three months did not differ significantly by sex or income deprivation, but there were also some significant variations in specific problems (Table W.34).

Girls reported higher prevalence of toothache than boys at both ages. In terms of variation by income deprivation, children that were eligible for free school meals reported considerably higher prevalence of toothache in the past 3 months compared to those that were not eligible for free school meals at both ages. In contrast, mouth ulcers were reported by higher proportions of children not eligible for free school meals, particularly among 12 year olds.

Table W.34 Self-reported problems with dental health in the last 3 months, by sex and eligibility for free school meals

Wales, 2013				
<i>Children aged 12, 15</i>	Male	Female	Percentages	
			Eligible for free school meals	Not eligible
12 year olds				
Any condition	70	72	67	73
Sensitive tooth	30	35	30	35
Mouth ulcers	23	23	11	26
Bad breath	25	18	25	22
Toothache	12	24	22	16
Bleeding or swollen gums	13	10	9	13
Broken tooth	8	7	11	6
15 year olds				
Any condition	60	75	83	66
Sensitive tooth	31	50	53	39
Mouth ulcers	20	27	22	25
Bad breath	20	16	18	19
Toothache	12	22	31	14
Bleeding or swollen gums	21	13	22	16
Broken tooth	8	9	13	7
<i>Unweighted bases</i>				
<i>12 year olds</i>	<i>319</i>	<i>292</i>	<i>161</i>	<i>399</i>
<i>15 year olds</i>	<i>293</i>	<i>253</i>	<i>115</i>	<i>373</i>

3.5 Impact of dental health on the child

Data on oral health related quality of life was collected through a global item (single question) and by using the Child Oral Impacts on Daily Performances (Child-OIDP) measure¹⁵. This was done for the first time in the 2013 survey. The single question on overall impact asked children how much the condition of their teeth and mouth affected their everyday life in the 3 months prior to the survey, with answer options of 'not at all', 'a little', 'somewhat', 'a fair amount' and 'a great deal'. The Child-OIDP measure focuses on eight key aspects of daily life and assesses the extent to which oral conditions may have negatively affected daily life over the same three month period. Answer options for each question were 'not at all', 'a little', 'a fair amount' and 'a lot'. Children who provided responses of 'a little', 'a fair amount' or 'a lot' were grouped to provide an estimate of the percentage of children suffering from each difficulty in the last 3 months.

Overall, around half (52% of 12 year olds and 54% of 15 year olds) of the older children said that they had at least one oral health related impact in the past 3 months (Table W.35).

Table W.35: Percentage of children with difficulties in the last 3 months, by age

Wales, 2013 <i>Children aged 12, 15</i>	Percentages	
	12 years	15 years
Embarrassed smiling or laughing	28	32
Difficulty eating	26	19
Difficulty cleaning teeth	21	17
Felt different	9	12
Difficulty speaking	6	11
Difficulty relaxing	11	8
Difficulty enjoying being with people	9	8
Difficulty doing schoolwork	5	3
Any difficulty in last 3 months	52	54
Number of difficulties in last 3 months		
0	48	46
1	22	27
2+	39	27
<i>Unweighted bases</i>	<i>605</i>	<i>539</i>

The bases reported here are based on 'any difficulty in the last 3 months'. Item bases may vary due to non-response

In terms of differences by sex, 15 year old girls were affected in greater proportions than boys, 62% and 47% respectively, and this difference was reflected in the children with the

¹⁵ Gherunpong S, Tsakos G, Sheiham A. Developing and evaluating an oral health-related quality of life index for children; the CHILD-OIDP. *Community Dental Health* 2004; 21: 161-169.

higher burden of oral impacts, defined as those that reported 2 or more impacts in the last 3 months (Table W.36).

Focusing on the children who reported experiencing multiple difficulties, among 15 year olds, 41% of those eligible for free school meals reported two or more oral impacts in the past 3 months.

Table W.36 Number of difficulties in the last 3 months, by sex and free school meal eligibility

Wales, 2013		Percentages				
<i>Children aged 12, 15</i>	12 years			15 years		
	Any difficulty	One difficulty	2 or more difficulties	Any difficulty	One difficulty	2 or more difficulties
Male	52	23	28	47	26	21
Female	52	21	31	62	27	34
Eligible for free school meals	49	23	26	62	21	41
Not eligible	52	21	31	54	28	26
<i>Unweighted bases</i>						
<i>Male</i>	316			290		
<i>Female</i>	289			249		
<i>Eligible for free school meals</i>	158			114		
<i>Not eligible</i>	395			365		

The bases reported here are based on 'any difficulty in the last 3 months'. Item bases may vary due to non-response

3.6 Impact of dental health to family

A series of questions, mostly extracted from the Family Impact Scale¹⁶, asked parents to rate how their child's oral health had affected various aspects of family life in the last six months. The following five answer options were provided: 'never', 'once or twice', 'sometimes', 'often' or 'every day or almost every day'. Any answer other than 'never' was taken as demonstrating an impact.

Examples of these aspects included having to take time off work, the child requiring more attention, or the parents feeling stressed, anxious or guilty.

Between 26% and 41% of parents reported that the dental health problems of their child had a negative impact on family life over that period (Table W.37). The most commonly reported impacts on family were the parents taking time off work, parents feeling stressed or anxious and the child needing more attention.

Table W.37 Impact of the child's oral health on the life of the family in the last 6 months, by age

Wales, 2013	Percentages			
	5 years	8 years	12 years	15 years
<i>All parents</i>				
Any family impact	26	32	30	41
Time off work	5	20	18	33
Parent felt stressed or anxious	17	12	13	19
Parent's sleep disrupted	5	12	8	14
Child needed more attention	11	14	18	12
Parent felt guilty	16	8	8	11
Family activities interrupted	5	6	7	10
Financial difficulties	1	3	5	9
<i>Unweighted bases</i>	<i>235</i>	<i>242</i>	<i>240</i>	<i>171</i>

The bases reported here are based on 'any family impact'. Item bases may vary due to non-response

¹⁶ Locker D, Jokovic A, Stephens M, Kenny D, Tompson B, Guyatt G. Family impact of child oral and oro-facial conditions. *Community Dent Oral Epidemiol.* 2002;30 (6):438-48.

4 Dental health related behaviours

Another methodological innovation of this survey is the wealth of information collected on a range of oral health behaviours and attitudes, consisting of tooth brushing, diet, and, from the 12 and 15 year olds questionnaire, tobacco use and alcohol consumption. Of particular value are the 12 and 15 year olds' self-reports of their behaviours, complementing the parental accounts of dental hygiene regimes. Diet, tobacco and alcohol consumption are known risk factors for oral and general health.

4.1 Tooth brushing

Tooth brushing is a good marker of oral hygiene. Guidance has traditionally been that brushing teeth twice daily would suffice for a good level of oral hygiene which in turn would not act as a risk factor for oral diseases, particularly the ones related to the gums¹⁷.

Parental reports of tooth brushing behaviour were generally similar to pupil self-reports for the 12 and 15 year olds. The added advantage of parental reports was that they provided information for 5 and 8 year olds. Overall, more than eight in ten 5 year olds, 8 year olds and 15 year olds and more than seven in ten 12 year olds brushed their teeth at least twice a day, according to their parents.

The percentage of 8 year olds brushing their teeth twice or more a day has increased significantly between 2003 and 2013 (Table W.38).

Table W.38 Parental report of percentage of children brushing their teeth twice or more a day, by age

Wales, 2003-2013								Percentages	
<i>All parents</i>	5 years		8 years		12 years		15 years		
	2003	2013	2003	2013	2003	2013	2003	2013	
Brush teeth twice or more a day	78	84	68	87	74	72	81	81	
<i>Unweighted bases</i>	217	237	192	238	164	237	140	172	

¹⁷ Delivering Better Oral Health: An evidence-based toolkit for prevention' 3rd edition. (2014) Public Health England (PHE). URL: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/367563/DBOHv32014OCTMainDocument_3.pdf

Overall, 73% of 12 year olds and 75% of 15 year olds reported that they brushed their teeth twice daily or more often (Table W.39).

Table W.39 Percentage of children reporting brushing their teeth twice or more a day, by age

Wales, 2013 <i>Children aged 12, 15</i>	Percentages	
	12 years	15 years
Brushes twice or more a day	73	75
<i>Unweighted bases</i>	604	541

Girls were much more likely than boys to self-report brushing their teeth twice or more a day at both ages. Among 12 year olds, 79% of girls and 66% of boys reported this, whilst among 15 year olds the respective figures were 84% and 66%.

Among children eligible for free school meals, 73% of 12 year olds and 65% of 15 year olds reported brushing their teeth twice or more a day (Table W.40).

Table W.40 Percentage of children reporting brushing their teeth twice or more a day, by sex and free school meal eligibility

Wales, 2013 <i>Children aged 12, 15</i>	Percentages	
	12 years	15 years
Male	66	66
Female	79	84
Eligible for free school meals	73	65
Not eligible	71	77
<i>Unweighted bases</i>		
<i>Male</i>	315	290
<i>Female</i>	289	151
<i>Eligible for free school meals</i>	158	113
<i>Not eligible</i>	394	368

4.1.1 Age started tooth brushing

An informative indicator of dental health behaviours is the age at which a child starts tooth brushing. Due to possible issues with the ability of a parent to accurately recall when this first occurred, this was only reported for 5 and 8 year old children.

Just under a quarter of 5 year olds started having their teeth brushed when they were less than six months old, and 50% of 5 year olds and 58% of 8 year olds started between six months to a year (Table W.41). For 8 year olds, just over a fifth started tooth brushing after the age of one.

Table W.41 Age started tooth brushing, by age

Wales, 2013	Percentages	
<i>Children aged 5, 8</i>	5 years	8 years
Under 6 months	24	21
Between 6 months and 1 year of age	50	58
Over 1 year of age	25	21
<i>Unweighted bases</i>	236	241

The age at which children started tooth brushing did not vary significantly by sex at either age (Table W.42).

Table W.42 Age started tooth brushing, by sex and free school meal eligibility

Wales, 2013		Percentages	
<i>Children aged 5, 8</i>		5 years	8 years
Male			
	Under 6 months	21	20
	Between 6 months and 1 year of age	46	60
	Over 1 year of age	32	21
Female			
	Under 6 months	27	22
	Between 6 months and 1 year of age	55	56
	Over 1 year of age	18	22
Eligible for free school meals			
	Under 6 months	[4]	[17]
	Between 6 months and 1 year of age	[57]	[43]
	Over 1 year of age	[39]	[40]
Not eligible			
	Under 6 months	28	21
	Between 6 months and 1 year of age	50	59
	Over 1 year of age	22	20
<i>Unweighted bases</i>			
	<i>Male</i>	114	131
	<i>Female</i>	122	110
	<i>Eligible for free school meals</i>	35	23
	<i>Not eligible</i>	195	212

4.2 Dental hygiene aids

The use of dental hygiene products can be a very useful marker of oral hygiene, particularly as the vast majority of children brush their teeth twice daily or more. Tooth brushing frequency may not be sufficient to differentiate between those that have optimal oral hygiene and those that need further improvement.

Parents were asked to indicate all oral hygiene aids that their children used, and Table W.43 shows the use of various dental hygiene aids in the last 12 months.

Mouthwash was the most common aide other than a manual or electric toothbrush and toothpaste, used by 27% of children aged 5 years, 54% of those aged 8, 69% of those aged 12 years and 74% of those aged 15 years. As expected, the use of mouthwashes, dental floss and sugar free gum was generally higher for older children. Fewer than half of children used electric tooth brushes.

Table W.43 Use of dental hygiene aids in the last 12 months, by age

Wales, 2013 <i>All parents</i>	Percentages			
	5 years	8 years	12 years	15 years
Toothbrush and toothpaste but no other products	64	37	17	14
Electric toothbrush	45	49	48	43
Mouthwash	27	54	69	74
Dental floss	5	6	17	32
Sugar-free or dental chewing gum	6	18	33	44
<i>Unweighted bases</i>	<i>242</i>	<i>245</i>	<i>242</i>	<i>173</i>

The base in this table is on use of toothbrush and paste but no other product. Item bases may vary due to non-response

Categories will not sum to 100% as this was a multiple response question

4.3 Diet, alcohol and tobacco consumption

Frequent consumption of sugary drinks and foods is an important risk factor for dental caries as well as obesity¹⁸. As part of the pupil questionnaire, the 12 and 15 year olds were asked to report on their usual daily frequency of consumption for a small range of food and drink indicators, some of which tend to be relatively high in sugar content. They were also asked questions about whether they currently, or have ever, smoked or consumed alcohol. Although this data does not represent a comprehensive measurement of such behaviours, it can be used to create indicators of daily consumption of different types of drink (including sugary drinks and alcohol) as well as tobacco consumption.

¹⁸ Moynihan PJ, Kelly SA. Effect on caries of restricting sugars intake: systematic review to inform WHO guidelines. *J Dent Res.* 2014 ;93(1):8-18.

Self-reports indicate that 18% of 12 year olds and 14% of 15 year olds consume sugary drinks 4 or more times a day (Table W.44). A quarter of 12 year olds and three tenths of 15 year olds reported drinking water four or more times a day.

Table W.44 Percentage of children consuming water, sugary drinks or fruit juice four or more times a day, by age

Wales, 2013							
<i>Children aged 12, 15</i>	12 years			15 years			
	Water	Sugary drinks	Fruit juice	Water	Sugary drinks	Fruit juice	
Drinking four or more times a day	25	18	5	30	14	5	
<i>Unweighted bases</i>	594	603	595	541	546	545	

There were some differences in the consumption of these drinks by sex. 12 year old boys were more likely to report consuming sugary drinks four or more times a day than girls of the same age, although this relationship was not present among 15 year olds (Table W.45).

Table W.45 Percentage of children consuming water, sugary drinks or fruit juice four or more times a day, by sex and free school meal eligibility

Wales, 2013							
<i>Children aged 12, 15</i>	12 years			15 years			Percentages
	Water	Sugary drinks	Fruit juice	Water	Sugary drinks	Fruit juice	
Male	22	24	6	25	15	4	
Female	28	11	5	34	13	6	
Eligible for free school meals	23	27	11	20	20	6	
Not eligible	26	15	4	30	12	5	
<i>Unweighted bases</i>							
Male	310	314	309	292	293	293	
Female	284	289	286	249	253	252	
Eligible for free school meals	155	159	158	115	115	115	
Not eligible	389	393	386	367	370	369	

Smoking was rare among 12 year olds but more common among 15 year olds. Just under one in ten 15 year olds reported being a current smoker, and a quarter reported ever having smoked (Table W.46).

Table W.46 Smoking status, by age

Wales, 2013 <i>Children aged 12, 15</i>	Percentages	
	12 years	15 years
Ever smoked cigarettes	5	25
Current smoker	*	9
<i>Unweighted bases</i>	<i>586</i>	<i>545</i>

Alcohol consumption is increasingly seen as a public health issue and related to oral health with issues of erosion, traumatic damage and oral cancer. Amongst 12 year olds, approximately a third (34%) of pupils reported ever drinking alcohol and over three quarters (79%) of 15 year olds also reported this (Table W.47). Under half (46%) of 15 year olds reported being a current alcohol drinker.

Table W.47 Alcohol consumption, by age

Wales, 2013 <i>Children aged 12, 15</i>	Percentages	
	12 years	15 years
Ever drunk alcohol	34	79
Current drinker	4	46
<i>Unweighted bases</i>	<i>591</i>	<i>545</i>

5 Patterns of dental service usage

Questions on utilisation and experience of dental care services have appeared in previous CDH Surveys. These are very important as they provide a good account of the pattern of dental services utilisation and also of how children and parents feel about using the services available. It is important context that most NHS treatment for children, including check-ups, is free of cost at the point of use; although the costs of getting to the dentist will vary. As such, information on service use has considerable implications both for the dental health of the children but also on the resources the NHS puts towards addressing and preventing oral health problems.

5.1 Pattern of dental attendance

Overall, 95% of 5 year olds and 98% of 8 year olds were reported by their parents to be visiting the dentist for a check-up in 2013 (Table W.48). Fewer than one in ten 12 year olds and one in twenty 15 year olds attend only when they have trouble with their teeth and an even smaller number have never been to the dentist, especially by the age of 8.

There has been little change in dental attendance patterns since 2003.

Table W.48 Parent reported pattern of child dental attendance¹, by age

Wales, 2003-2013								Percentages	
<i>All parents</i>	5 years		8 years		12 years		15 years		
	2003	2013	2003	2013	2003	2013	2003	2013	
For a check-up	92	95	93	98	95	90	94	95	
Only when have trouble with teeth	3	1	5	1	5	9	6	5	
Never been to the dentist	5	4	2	1	-	1	-	*	
<i>Unweighted bases</i>	<i>217</i>	<i>236</i>	<i>191</i>	<i>243</i>	<i>165</i>	<i>238</i>	<i>140</i>	<i>171</i>	

¹For the 2003 data, the question categories 'regular check-up' and 'occasional check-up' were combined for comparison to the 2013 category 'for a check-up'

Older children self-reported their pattern of dental attendance. Overall, 87% of 12 and 15 year olds reported that they attend the dentist for a check-up (Table W.49). There are still more than one in nine children that only attend when they have trouble, with 1% of 12 and 15 year olds reporting that they have never visited the dentist.

Table W.49 Self-reported dental attendance pattern, by age

Wales, 2013 <i>Children aged 12, 15</i>	Percentages	
	12 years	15 years
For a check-up	87	87
Only when have trouble	11	12
Never been	1	1
<i>Unweighted bases</i>	603	539

For each of the four ages included in this survey, around 9 out of 10 children visited the dentist in the last 12 months as reported by their parents (Table W.50). There was little evidence of change in the percentage of children attending the dentist in the last 12 months, between 2003 and 2013.

Table W.50 Percentage of children who visited the dentist in the last 12 months, by age

Wales, 2003-2013 <i>All parents</i>	Percentages							
	5 years		8 years		12 years		15 years	
	2003	2013	2003	2013	2003	2013	2003	2013
Visited dentist in the last 12 months	89	91	94	96	94	89	93	96
<i>Unweighted bases</i>	218	240	193	244	165	239	140	172

5.2 Parent or guardian's dental attendance

Table W.51 compares the dental attendance pattern of the parent and the attendance of the child (as reported by the same parent). The data show that the dental attendance pattern of the parent and that of their child were strongly related when the pattern was favourable, but were quite different in cases where the parent was not attending for a check-up.

Almost all parents who attended a regular check-up themselves reported that their children also attended for a check-up. Parents who only attended an occasional check-up reported that their child attended in between 83% and 97% of cases. For those parents who only attended when they had trouble, their child's attendance at a dentist generally further reduced. Only 40% of 12 year old children were reported to attend a dental check-up if their parents either didn't go to the dentist, or only went if they had trouble themselves.

Table W.51 Dental attendance of responding parent by parent report of child dental attendance

Wales, 2013		Percentages			
<i>All parents</i>		5 years	8 years	12 years	15 years
<i>Adult attendance (responder)</i>	<i>Child attendance</i>				
<i>A regular check up</i>	For a check up	97	99	99	100
	Only when have trouble/never been	3	1	1	-
<i>An occasional check up</i>	For a check up	[93]	[87]	[97]	[83]
	Only when have trouble/never been	[7]	[13]	[3]	[17]
<i>Only when I have trouble / I don't go to the dentist</i>	For a check up	[89]	[96]	[40]	[69]
	Only when have trouble/never been	[11]	[4]	[60]	[31]
<i>Unweighted bases</i>					
<i>A regular check up</i>		180	202	201	141
<i>An occasional check up</i>		27	15	12	13
<i>Only when I have trouble / I don't go to the dentist</i>		27	25	25	17

5.3 Access to NHS dental treatment services

Eight out of ten parents in Wales in 2013 reported that they had never experienced any difficulty finding an NHS dentist for their children (Table W.52). Despite this finding, it is important to highlight that there were parents (14%) in 2013 that did report experiencing difficulty in finding an NHS dentist to examine and treat their children. This proportion increased from 6% in 2003.

Table W.52 Ever had difficulty finding an NHS dentist

Wales, 2003-2013 <i>All parents</i>	Percentages	
	2003	2013
Yes	6	14
No	88	80
Never tried to find one	6	6
<i>Unweighted bases</i>	<i>699</i>	<i>895</i>

There was no relationship between free school meal eligibility and likelihood of reporting having difficulty accessing an NHS dentist (Table W.53).

Table W.53 Ever had difficulty finding an NHS dentist, by free school meal eligibility status

Wales, 2013 <i>All parents</i>	Percentages	
	Eligible for free school meals	Not eligible
Yes	18	14
No	77	81
Never tried to find one	4	5
<i>Unweighted bases</i>	<i>131</i>	<i>722</i>

5.4 Satisfaction with dental treatment services

Table W.54 presents the findings in relation to satisfaction of users with different aspects of dental treatment services. Parents were asked to rate several facets of the last dental practice that they took their child to, on a scale from 'very good' to 'very poor'. A 'not applicable' option was provided, and these responses are excluded from the base in the tables below. Responses of 'very good' and 'good' were treated as 'satisfied', whilst 'poor' and 'very poor' were treated as 'dissatisfied'.

More than nine in ten parents reported overall satisfaction with the last dental practice visited with their child (Table W.54).

Table W.54 Percentage of parents satisfied with the last dental practice visited with their children, by age

Wales, 2013		Percentages			
<i>All parents</i>	5 years	8 years	12 years	15 years	Total
Wait for routine appointment	76	74	81	76	77
Wait for urgent appointment	83	86	87	74	82
Overall satisfaction	93	96	95	93	94
Unweighted bases	227	241	237	172	877

There was relatively little variation in levels of overall satisfaction with last dental practice by the sex of the child. Again more than nine in ten of parents with children both eligible and not eligible for free school meals were satisfied overall with the last dental practice visited (Table W.55).

Table W.55 Parent overall satisfaction with the last dental practice visited with their child, by sex and eligibility for free school meals

Wales, 2013		Percentages			
<i>All parents</i>	5 years	8 years	12 years	15 years	
Male	99	96	93	92	
Female	87	96	97	94	
Eligible for free school meals	[93]	[92]	[91]	[93]	
Not eligible	93	96	96	92	
<i>Unweighted bases</i>					
Male	108	130	128	92	
Female	119	111	109	80	
Eligible for free school meals	32	23	48	22	
Not eligible	189	212	172	137	

5.5 Dental care received

As expected, the lifetime experience of dental treatment in permanent teeth (fillings and extractions) was higher for successive ages in this sample. While there was an increase in the lifetime provision of fillings as well as extractions in permanent teeth by age, the age of 12 years seemed to be of particular importance; almost one in five children had experienced extractions at that age. At age 15, 49% of children had received a filling in a permanent tooth and 30% had a permanent tooth extracted (Table W.56).

Table W.56 Dental care ever received by age

Wales, 2013	Percentages			
<i>All parents</i>	5 years	8 years	12 years	15 years
Permanent tooth filled	2	7	30	49
Permanent tooth extracted	*	2	19	30
Primary tooth filled	16	43	36	30
Primary tooth extracted	5	22	33	32
General anaesthetic before dental treatment	3	13	21	21
Sedation before dental treatment	*	13	21	21
A brace fitted or adjusted	-	*	20	32
Scale and polish	3	8	18	36
Preventative treatment to teeth	16	35	29	32
Advice on oral care	48	54	62	70
<i>Unweighted bases</i>	<i>234</i>	<i>242</i>	<i>240</i>	<i>172</i>

The base reported here is for permanent tooth filled. Item bases may vary due to non-response

Over one fifth of children at 12 and 15 years of age were reported to have experienced a general anaesthetic before dental treatment at some point in their life, whilst the same proportion of children aged 12 and 15 years were reported to have experienced sedation before dental treatment.

With regards to orthodontic treatment, one fifth of 12 year olds and almost one third of 15 year olds have had a brace fitted or adjusted. The proportion of children who had received a scale and polish increased with age resulting in over one third of 15 year olds having experienced this procedure. Whilst only 16% of 5 year old children were reported to have received preventative treatment to teeth, this proportion more than doubled to 35% of 8 year old children. Just under one third of older 12 and 15 year old children were reported to have received preventative treatment to teeth. The proportion of children who received advice on oral care rose with age from 48% of 5 year olds to 70% of 15 year olds.

5.6 Dental anxiety and its relationship to treatment experience

Dental anxiety has not been assessed in any of the previous Child Dental Health Surveys beyond the inclusion of a single question, in the 2003 survey parent questionnaire, regarding emotions about attending the dentist.

The pupil questionnaire for 12 and 15 year olds included the Modified Dental Anxiety Scale (MDAS)¹⁹, which is a modified version of Corah's Dental Anxiety Scale²⁰ and includes a question assessing fears associated with local anaesthesia as well as four other scenarios and asks the respondent to report the extent of their anxiety, ranging from 'not anxious' to 'extremely anxious'. These four scenarios include anticipated anxiety in relation to going to the dentist tomorrow, sitting in a dentist's waiting room, having a tooth drilled and having a scale and polish. A five point response format was used for each of the five items: 'not anxious' (1), 'slightly anxious' (2), 'fairly anxious' (3), 'very anxious' (4) and 'extremely anxious' (5). The MDAS score is calculated by summing the scores of the individual items (ranging between 5 and 25), with the lowest possible score (5) indicating no anxiety at all and scores of 19 and above indicating extreme dental anxiety, which may be indicative of dental phobia. For the purpose of analysis the data was grouped as follows: 5-9 indicating low or no anxiety, 10-18 showing moderate levels of anxiety and 19+ being extreme anxiety. These groups have been used in other national surveys.

In 2013, parents in Wales were asked to rate their child's anxiety about visiting the dentist in general terms (on a scale of 1-10 with a value of 1 being not at all anxious and 10 being extremely anxious). An option for 'my child never goes to the dentist' was provided. This scale was divided into groups as follows: A score of 1 indicating no anxiety; 2-4 low levels of anxiety and 5-10 moderate to extreme levels of anxiety.

Table W.57 shows the results for parental assessment of their child's dental anxiety. For around half of all children, parents reported no dental anxiety. Moderate to extreme dental anxiety was recorded for between 16% and 23% of all children.

Table W.57 Parental report on child anxiety when visiting the dentist, by age

Wales, 2013	Percentages			
	5 years	8 years	12 years	15 years
<i>All parents</i>				
No anxiety	53	50	49	50
Low anxiety	31	29	31	27
Moderate to extreme anxiety	16	21	19	23
My child never goes to dentist	*	*	1	*
<i>Unweighted bases</i>	228	238	236	169

¹⁹ Humphris, Morrison, and Lindsay (1995) The Modified Dental Anxiety Scale: validation and United Kingdom norms. *Community Dent Health* Sep 12 (3) 143-50

²⁰ Corah (1969) Development of a dental anxiety scale *J Dent Res* 48 (4) 596

Table W.58 shows the self-reported dental anxiety measure for the older children. Overall, 13% of 12 year olds and 12% of 15 year olds in Wales were classified as having extreme dental anxiety.

Table W.58 Self-rated anxiety about visiting the dentist, by age

Wales, 2013 <i>Children aged 12, 15</i>	Percentages	
	12 years	15 years
Low/no anxiety	30	36
Moderate anxiety	57	53
Extreme anxiety	13	12
<i>Unweighted bases</i>	<i>582</i>	<i>534</i>

Higher dental anxiety was more common among girls rather than boys especially amongst 15 year olds, which may indicate that girls are genuinely more anxious than boys or that they are more willing to report it. There was no link between dental anxiety and relative deprivation.

Table W.59 Self-rated anxiety about visiting the dentist, by sex and free school meal eligibility

Wales, 2013 <i>Children aged 12, 15</i>	Percentages	
	12 years	15 years
Male		
Low/no anxiety	36	53
Moderate anxiety	53	41
Extreme anxiety	11	6
Female		
Low/no anxiety	23	19
Moderate anxiety	62	64
Extreme anxiety	15	17
Eligible for free school meals		
Low/no anxiety	33	35
Moderate anxiety	56	51
Extreme anxiety	10	14
Not eligible		
Low/no anxiety	29	34
Moderate anxiety	58	54
Extreme anxiety	14	11
<i>Unweighted bases</i>		
<i>Male</i>	<i>311</i>	<i>284</i>
<i>Female</i>	<i>271</i>	<i>250</i>
<i>Eligible for free school meals</i>	<i>154</i>	<i>113</i>
<i>Not eligible</i>	<i>377</i>	<i>362</i>

Around one fifth of 12 and 15 year olds with extreme dental anxiety reported that they would only attend the dentist when they had trouble or that they had never been to the dentist. Approximately four fifths of extremely anxious 15 year olds reported visiting the dentist for check-ups (Table W.60).

Table W.60 Dental attendance pattern for children with low and extreme self-rated dental anxiety, by age

Wales, 2013 <i>Children aged 12, 15</i>	Percentages			
	12 years		15 years	
	Low anxiety	Extreme anxiety	Low anxiety	Extreme anxiety
For a check up	93	81	91	79
Only when I have trouble with my teeth/never been	7	19	9	21
Unweighted bases	160	70	203	67

**Published by the Health and Social Care Information Centre
Part of the Government Statistical Service**

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ISBN 978-1-78386-323-5

This publication may be requested in large print or other formats.

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